

10 11 0001

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

20313

IN THE MATTER OF:

Olin Chemicals
McIntosh PlantOlin Corporation
Stamford, Connecticut

Respondent.

)
) Proceeding under Section 104
) and Section 122(d)(3) of the
) Comprehensive Environmental
) Response, Compensation
) and Liability Act of 1980,
) as amended, 42 U.S.C.
) §§9604 and 9622(d)(3).

)
) EPA Docket No.:90-13-C
)

ADMINISTRATIVE ORDER BY CONSENT
FOR REMEDIAL INVESTIGATION FEASIBILITY STUDY

I. JURISDICTION

This Administrative Order by Consent (Consent Order) is entered into by the United States Environmental Protection Agency (EPA) with Respondent, pursuant to the authority vested in the President of the United States by Section 104 and Section 122(d)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§9604, and 9622(d)(3). This authority was delegated by the President to the Administrator of the EPA by Exec. Order No. 12580, dated January 23, 1987, 52 Fed. Reg. 2923 (Jan. 29, 1987), and was further delegated to the Regional Administrator of Region IV EPA and redelegated to the Director, Waste Management Division.

Respondent agrees to undertake all actions required by the terms and conditions of this Consent Order for the conduct and implementation of Remedial Investigation and Feasibility Studies (RI/FS). The Respondent consents to and will not contest EPA jurisdiction for the purposes of entry and enforcement of this Consent Order.

Respondent does not admit, accept, concede or acknowledge the determinations, allegations, findings of fact, and conclusions of law made by EPA in this Consent Order, and specifically reserves the right to contest any such determinations, allegations, findings, and conclusions in any proceeding regarding the Site as defined in Section IV below, other than an action brought by EPA to enforce this Consent Order. Further, Respondent does not admit liability under CERCLA/SARA or any other statutory or common law and any responsibility for

response costs or damages thereunder, and does not, by signing this Consent Order, waive any rights they may have under CERCLA/SARA against any person (other than the United States Government, its agencies, departments, agents and employees as defined in Section 101(21) of CERCLA, 42 U.S.C. §9601(21).

II. PARTIES BOUND

This Consent Order shall apply to and be binding upon EPA and the Respondent, its agents, successors, and assigns. Respondent is jointly and severally responsible for carrying out all actions required of it by this Consent Order. The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership of corporate status of the Respondent shall alter its responsibilities under this Consent Order. The Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights are transferred. The Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this Consent Order, within 14 days after the effective date of this Consent Order or the date of retaining their services. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its contractors and agents comply with this Consent Order.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondent are: (A) with respect to the Remedial Investigation, to determine fully the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants from the Site into the environment; (B) with respect to the Feasibility Study, to develop and evaluate alternatives for the appropriate extent of remedial action to prevent or mitigate the migration or the release or threatened release of hazardous substances, pollutants, or contaminants from the Site; and (C) to recover response and oversight costs incurred by EPA with respect to this Consent Order.

The activities conducted pursuant to this Consent Order will be consistent with the National Contingency Plan (NCP), 40 C.F.R. Part 300, et seq., and will be subject to the express EPA approvals as set forth below.

IV. FINDINGS OF FACTS

The following constitutes an outline of the facts upon which this Consent Order is based:

A. Olin Chemicals/McIntosh Plant is located east-southeast of McIntosh, Washington County, Alabama. The Olin Chemicals/McIntosh Plant (the "Site") covers approximately 1,500 acres and is bounded by the Tombigbee River on the east, Ciba-Geigy plant on the north and US Highway 43 to the west and River Road to the South.

From 1952 until December 1982, Olin operated a mercury cell chlorine-caustic soda plant on a portion of the Site. In 1954, Olin Mathieson (predecessor corporation to Olin Chemicals) purchased an organics chemical plant from Calabama Chemical located on an adjacent portion of the Site and constructed a pentachloronitrobenzene (PCNB) plant in 1955 and 1956, with start up operations in 1956. The plant was later expanded to include the production of trichloroacetonitrile (TCAN) and 5-ethoxy-3-trichloromethyl-1,2,4-thiadiazole (Terrazole). In 1978, Olin constructed a diaphragm cell caustic soda/chlorine plant which is still in operation. The Olin Chemicals/McIntosh Plant continues to operate today producing chlorine, caustic soda, sodium hypochlorite, sodium chloride and blending hydrazine.

B. Olin discharged effluent from the production processes into a natural basin until 1974.

C. Respondent is the Olin Corporation, 120 Long Ridge Road, P.O. Box 1355, Stamford, Connecticut, 06904-1355.

D. Respondent is the owner and operator of the Site.

E. The Site is on the National Priorities List (NPL). See 49 Fed. Reg. 37070 (September 21, 1984).

F. In listing on the NPL, EPA found the following hazardous substances associated with the Site:

mercury
gamma-hexachlorocyclohexane
hexachlorobenzene
1,2,4 trichlorobenzene
1,4 dichlorobenzene

These hazardous substances have known toxic effects, which may include carcinogenicity.

G. The geology of the Site consists of the East Gulf Coastal Plain Province underlain by sedimentary rocks dipping southwesterly at 30 to 50 feet per mile. The general dip of these rocks is locally interrupted by folds, faults and salt domes. The McIntosh area is underlain by alternating beds of unconsolidated to consolidated sedimentary units. The McIntosh salt dome is the most distinctive structural feature of the area.

Near surface strata consist of Quaternary alluvial terrace and flood plain sediments deposited by the Tombigbee River. The sediments range in thickness from 80 to 100 feet consisting of beds of sand, gravel, silt and clay which form the Alluvial Aquifer system. The underlying Miocene unit is also composed of alluvial sediments. A Miocene clay strata, which varies in thickness from 80 to 100 feet, is between the upper Alluvial Aquifer and the Miocene Aquifer.

The uppermost layer of soil in the vicinity of the Site generally consists of a low permeability clay ranging in depth from 1 to 15 feet. The soil layer is underlain by Quaternary age sands, gravels and discontinuous zones of fine sand, clay and silt interbedded with coarser sand and gravel. The soil layer and deposits have a combined average thickness of 90 to 100 feet under which there is a clay layer approximately 100 feet thick. Underlying the clay unit approximately 200 feet below surface is the Miocene Aquifer, consisting of alluvial sands and gravel.

The majority of surface runoff from the Site flows east and southeast to an unnamed tributary, which discharges into the Tombigbee River further to the southeast. The surface runoff of the western-most portion of the Site flows west and ultimately flows to the Tombigbee. Drainage from the main plant area is through a system of man-made culverts and ditches, which direct the runoff east and southeast toward the Tombigbee River. Two aquifers are of concern at the Site: The Alluvial Aquifer and the Miocene Aquifer are underground sources of drinking water. The Alluvial Aquifer is directly recharged by infiltration from the surface. The underlying Miocene Aquifer is a confined artesian aquifer, which is not subject to significant leakage from the overlying Alluvial Aquifer.

H. Contamination was released or may potentially be released through on-site waste deposits, soil/sediment contamination, ground water contamination and surface water contamination.

Potential migration pathways include surface water run-off to the Tombigbee; south-southwest and southeasterly flow

of the Alluvial Aquifer to the Tombigbee; inhalation, ingestion or dermal contact of soils; and contaminated surface and groundwaters discharged to the basin, wetlands, and to the Tombigbee.

I. Potential receptors include the town of McIntosh, local residences to the south and southwest, the basin and associated wetland areas to the east of the plant and to the Tombigbee River.

The town of McIntosh is the nearest population center to the Site. The town uses a public well located 2 miles northwest of the Site and draws water from the Miocene Aquifer. Scattered private residences are located both to the south and southeast of the Site. The basin and associated wetlands areas are also considered receptors along with the Tombigbee. Other potential receptors include fish and wildlife which have been identified by the U. S. Fish and Wildlife Service as among the list of endangered species.

J. Since 1984, ten RCRA SWMUs have been either closed or clean closed under 40 C.F.R. §265, which include:

SWMUs CLOSED OR CLEAN CLOSED UNDER 40 C.F.R. §265

<u>Name</u>	<u>Closure</u> <u>ADEM</u>	<u>Approval</u> <u>EPA</u>
1. Stormwater pond	May 1, 1986	April 28, 1986
2. Brine filter backwash pond	May 1, 1986	April 28, 1986
3. Pollution abatement (Ph) pond	August 14, 1985	August 13, 1985
4. Weak Brine Pond	August 9, 1987	June 24, 1987
5. Mercury Waste Pile Storage pad	March 12, 1985	(ADEM had Interim Status Authority)
6. TCAM Hydrolyzer	March 21, 1984	(ADEM had Interim Status Authority)
7. Mercury Drum Storage Pad	March 12, 1985	(ADEM had Interim Status Authority)

- | | | |
|--|-------------------|----------------|
| 8. Chromium Drum
Storage Pad | February 25, 1986 | March 31, 1986 |
| 9. PCB/Hexachloro-
benzene Storage
Building | February 25, 1986 | March 31, 1986 |
| 10. Hazardous Waste
Drum (Flammable)
Storage Pad | February 25, 1986 | March 31, 1986 |

Olin has closed the units and conducted remedial activity in accordance with then existing RCRA requirements as approved by EPA and ADEM. The post-closure permit that has been issued by both EPA and ADEM includes a requirement for a groundwater Corrective Action Program. Olin pursuant to the Corrective Action Program is presently conducting groundwater remediation for the Site excluding the basin area.

K. EPA/ADEM have issued a post closure and Corrective Action permit for the RCRA site remediation except for the basin area, and is supervising a Corrective Action Program which includes groundwater remediation. This RCRA Corrective Action Program approved by EPA/ADEM includes five recovery wells and a groundwater pumping, collection and treatment system.

L. In November, 1989, Olin submitted to EPA an RI/Risk Assessment report for Operable Unit One (which contains limited data from Operable Unit Two) and is presently awaiting EPA's determination of the adequacy of this previously submitted report.

M. Based on a review of currently available data as indicated in the EPA memorandum generated by the Roy F. Weston Inc. Technical Assistance Team (TAT) and provided to Carol Monell, EPA Region IV, dated August 11, 1989, addressing the the McIntosh Site, EPA concluded that no emergency action was necessary at the time of the review.

V. CONCLUSIONS OF LAW

A. The Site is a facility within the meaning of Section 101(9) of CERCLA, 42 U.S.C. §9601(9).

B. The Respondent is a person as defined in Section 101(21) of CERCLA, 42 U.S.C. §9601(21).

C. The Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. §9607(a)

D. Contaminants found at the Site as described in Section IV (Findings of Fact) above are hazardous substances within the meaning of Section 101(14) of CERCLA, 42 U.S.C. §9601(14).

E. The hazardous substances described have been released into the environment and its potential migration pathways constitute both an actual release and threatened release within the meaning of Section 101(22) of CERCLA, 42 U.S.C. §9601(22).

VI. DETERMINATIONS

Based on the Findings of Fact and Conclusions of Law set out above, EPA has determined that:

A. The actual and/or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health and/or welfare and/or the environment.

B. The actions required by this Consent Order are necessary to protect the public health and/or welfare and/or the environment.

C. In accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. §9604(a)(1), EPA has determined that the work to be performed pursuant to this Consent Order, if performed according to the terms of this Order, will be done properly and promptly by the Respondent. EPA has also determined that the Respondent is qualified to conduct such work.

D. Respondent will properly and promptly conduct the RI/FS and is qualified to do so, in accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. §9604(a)(1), as amended by SARA.

VII. WORK TO BE PERFORMED

All aspects of the work to be performed by Respondent pursuant to this Consent Order shall be under the direction and supervision of a qualified Olin employee or qualified contractor, the selection of which shall be subject to approval by EPA. Within fifteen (15) days after the effective date of this Consent Order, Respondent shall submit to EPA in writing the name, title, and qualifications of any such employee or contractor proposed to be used in carrying out the RI/FS to be performed pursuant to this Consent Order. Respondent shall also advise EPA of the name, title, and qualifications of the

employee or contractor proposed to be used in carrying out the risk assessment portion of the RI/FS. EPA shall notify the Respondent of its approval or disapproval in writing, within twenty (20) calendar days of its receipt of this submission by the Respondent.

If EPA disapproves of the selection of any supervising employee or contractor, Respondent shall submit a list of alternate employees or contractors to EPA within fifteen (15) days of receipt of EPA's disapproval of the employee or contractor previously selected. EPA shall, within twenty (20) calendar days of receipt of the list, provide written notice of the names of the contractor that it approves. The Respondent may at its election select any one from the EPA approved list. Respondent shall notify EPA of the name of the employee or contractor selected within fifteen (15) calendar days of EPA's notice of the approved list.

If, at any time thereafter, Respondent proposes to change a supervising employee or contractor, Respondent shall give such notice to EPA and shall obtain approval from EPA before the new supervising employee or contractor performs any work under this Consent Order.

Based on the foregoing, it is hereby AGREED TO AND ORDERED that the following work will be performed:

A. As noted in the Findings of Fact, paragraph L above, Respondent has previously conducted several studies and performed various tasks at the Site. Respondent has compiled and submitted this information in seven (7) volumes and is presently awaiting EPA's review. EPA will review the information so submitted and determine if, and to what extent, such information will satisfy a task, deliverable and/or other requirement under this Consent Order. In connection with making such determination(s), the EPA may require verification sampling and/or additional sampling following EPA protocols and the SOW, with the results of such sampling being submitted to the EPA for further review.

B. Within forty-five (45) calendar days from receipt of EPA's review comments as required under paragraph A above, Respondent shall submit to EPA a plan for a complete Remedial Investigation and Feasibility Study (RI/FS Work Plan). The RI/FS Work Plan shall be developed and submitted in conjunction with the Sampling and Analysis Plan and the Health and Safety Plan, although each plan may be delivered under separate cover. These plans shall be developed in accordance with the National Contingency Plan (NCP) and the attached Scope of Work (SOW) (Attachment 1) which is hereby made a part of this Consent Order

as if fully set forth herein. For purposes of the RI/FS to be conducted, the Site will be divided into two units known as Operable Unit 1 (all Olin property except that which is defined as Operable Unit 2) and Operable Unit 2 (the basin and associated wetlands area). Work will be conducted in the two units concurrently. Work under this Consent Order will be consistent with and fulfill all HSWA permit requirements pursuant to 40 C.F.R. §270.1(c)(5) (1989) as to both operable units.

The RI/FS Work Plan shall include a comprehensive description of the work to be performed, the medias to be investigated (i.e., air, groundwater, surface water, surface and subsurface soils and sediments, etc.), the methodologies to be utilized, and the rationale for the selection of each methodology. A comprehensive schedule for completion of each major activity and submission of each deliverable listed in the RI/FS Scope of Work (Attachment 1) shall also be included.

The Sampling and Analysis Plan (SAP) shall include procedures to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data generated will meet the Data Quality Objectives (DQOs) established. The SAP provides a mechanism for planning field activities and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used on the project. It shall include sample objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs.

A Health and Safety Plan shall be prepared in conformance with the Respondent's health and safety program, and in compliance with OSHA regulations and protocols and attached Scope of Work.

C. Within sixty (60) calendar days after receipt of the RI/FS Work Plan by EPA, EPA will notify Respondent in writing of EPA's approval or disapproval of the RI/FS Work Plan or any part thereof. In the event of any disapproval, EPA will specify in writing both the deficiencies and any EPA recommended modifications regarding the RI/FS Work Plan.

D. Respondent will implement the RI/FS Work Plan approved by EPA. The EPA approved RI/FS Work Plan and any EPA

approved amendments thereto will be attached to and incorporated in this Consent Order as Attachment 2. This RI/FS work will be conducted in accordance with the schedule contained in the RI/FS Work Plan, unless the schedule is modified with EPA's written approval.

Within 7 calendar days of receipt of written approval of the RI/FS Work Plan by EPA, Respondent will commence work on Task 1 of the RI/FS Work Plan.

E. Respondent shall submit to EPA written monthly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this Consent Order during the previous month; (2) include all results of sampling and tests and all other data received by Respondent during the course of the work, excluding data previously submitted; (3) include all plans and procedures completed under the Work Plan during the previous month; (4) describe all actions, data, and plans which are scheduled for the next month, and provide other information relating to the progress of the work as deemed necessary by EPA; and (5) include information regarding percentage of completion, unresolved delays, encountered or anticipated, that may affect the future schedule for implementation of the Scope of Work and/or RI/FS Work Plan, and a description of efforts made to mitigate those delays or anticipated delays. These progress reports are to be submitted to EPA by the tenth day of every month following the effective date of this Consent Order.

F. Documents, including reports, approvals, and other correspondence, to be submitted pursuant to this Consent Order, shall be sent by certified mail to the following address or to such other addresses as the EPA hereafter may designate in writing:

Cheryl W. Smith
Remedial Project Manager
Waste Management Division
South Superfund Remedial Branch
EPA - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

The number of copies to be submitted to EPA for each deliverable is identified in the RI/FS Scope of Work.

For informational purposes documents (two copies) should be sent to:

Daniel E. Cooper, Chief, Special Projects
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130

Richard A. Pettigrew
Morgan, Lewis & Brockius
5300 Southeast Financial Center
200 South Biscayne Boulevard
Miami, Florida 33131-2339
Attorney for Respondent

Documents (three copies) to be submitted to the Respondent's
Project Coordinator should be sent to:

William J. Derocher
Plant Manager
Olin Chemicals
Olin Corporation
P.O. Box 28
McIntosh, Alabama 36553
(one copy)

James C. Brown
Manager, Environmental Affairs Department
Olin Chemicals
P.O.Box 248
Lower River Road
Charleston, Tennessee 37310
(two copies)

G. In addition to the EPA approved tasks and deliverables to be completed pursuant to this Consent Order, EPA may determine that tasks in addition to those set forth in the RI/FS Work Plan submitted by Respondent and approved by EPA (including remedial investigatory work and/or engineering evaluation) may be a necessary part of the RI/FS. Should EPA determine that such additional tasks are necessary, EPA shall notify Respondent. Within a reasonable period of time not to exceed fifteen (15) days after receipt of EPA's notice, Respondent shall notify EPA in writing as to whether or not Respondent will agree to conduct the additional tasks. Upon written agreement of EPA and Respondent, this Consent Order may be modified as necessary to address such further investigation and study. The additional work shall be completed in accordance with the standards, specifications, and schedule determined or approved by EPA. Should Respondent not agree to perform these additional tasks, EPA retains the right to perform the additional work and to seek cost recovery. Failure of the Respondent to agree to perform additional work under this Section VII.I. shall not be a violation of this Consent Order.

VIII. SUBMISSIONS REQUIRING AGENCY APPROVAL

A. EPA reserves the right to comment on, modify and direct changes for all deliverables. Upon receipt of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Order, EPA shall either: approve the submission; or (2) disapprove the submission, notifying Respondent of deficiencies. If such submission is disapproved, EPA shall either (1) modify the submission to cure the deficiencies; or (2) direct the Respondent to modify the submission to cure the deficiencies.

B. In the event of approval or modification of the submittal by EPA, Respondent shall proceed to take any action required by the plan, report, schedule or other item, as approved or modified.

C. Upon receipt of a notice of disapproval and notification directing modification of the submission, (i) in the event additional field or laboratory work is not required to correct the deficiencies in such submission, Respondent shall correct the deficiencies and resubmit the plan, report, schedule, or other item for approval (a) on the first resubmission, within thirty (30) days, or (b) on any additional resubmissions, within such reasonable period of time as shall be required by EPA; or (ii) in the event that field or laboratory work is required to correct the deficiencies in such submission and such field or laboratory work was not provided for in the approved RI/FS Work Plan, Respondent and the EPA shall agree on an appropriate amount of time for preparation of the plan, report or other item. Notwithstanding the notice of disapproval, Respondent shall proceed to take any action required by the submission, which is not contingent or reliant upon the deficient portion.

D. If, upon resubmission, the plan, report, schedule or item is not approved, Respondent shall be deemed to be in violation of this Consent Order and stipulated penalties shall begin to accrue pursuant to Section XVI (Stipulated Penalties) of this Consent Order, EPA retains the right to seek stipulated or statutory penalties, to require the amendment of the document, to perform additional studies, to conduct a complete RI/FS pursuant to its authority under CERCLA, and to take any other action, including, but not limited to, enforcement action to recover its costs pursuant to its authority under CERCLA.

E. Neither failure of EPA to expressly approve or disapprove of Respondent's deliverables within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Respondent is responsible for preparing and submitting deliverables acceptable to EPA.

F. Respondent shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct and completion of the RI/FS. In addition to the discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

G. The provisions of this Consent Order shall govern all proceedings regarding the RI/FS work conducted pursuant to this Consent Order. In the event of any inconsistency between this Consent Order and any required deliverable submitted by Respondent, the inconsistency will be resolved in favor of this Consent Order.

IX. DESIGNATED PROJECT COORDINATORS

A. On or before the effective date of this Consent Order, EPA and Respondent will each designate a Project Coordinator. Each Project Coordinator will be responsible for overseeing the implementation of this Consent Order. The EPA Project Coordinator will be EPA's designated representative at the Site. To the maximum extent possible, communications between Respondent and EPA, including all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, will be directed through the Project Coordinators.

B. Either EPA or Respondent has the right to change their respective Project Coordinator. Such a change will be accomplished by notifying the other party in writing at least five (5) calendar days prior to the change.

C. The EPA designated Project Coordinator will have the authority provided by the National Contingency Plan, 40 C.F.R. Part 300, as amended. This includes the authority to halt, conduct, or direct any tasks required by this Consent Order, or any response actions or portions thereof, when conditions present an immediate risk to public health or welfare or the environment.

D. The absence of the EPA Project Coordinator from the Site will not be cause for the stoppage or delay of work.

X. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

A. Respondent shall use quality assurance, quality control, and chain of custody procedures in accordance with EPA's "Interim Guidelines and Specifications For Preparing

Quality Assurance Project Plans" (QAMS-005/80) and the "EPA Region IV Engineering Support Branch Standard Operating Procedure and Quality Assurance Manual (U.S. EPA Region IV, Environmental Services Division, April 1, 1986), and subsequent amendments to such guidelines. Respondent shall be given a reasonable time period to incorporate into its sampling and data analysis newly incorporated amendments to such guidelines. Prior to the commencement of any monitoring project under this Consent Order, Respondent shall submit for review, modification and/or approval by EPA, a Quality Assurance Project Plan ("QAPP") that is consistent with applicable guidelines. Sampling data generated consistent with the QAPP(s) shall be admissible as evidence, without objection, in any proceeding under Section XIV (Dispute Resolution) of this Order. Respondent shall assure that EPA personnel or authorized representatives are allowed reasonable access to any laboratory utilized by Respondent in implementing this Consent Order.

B. Respondent shall make available to EPA the results of all sampling and/or tests or other data generated by Respondent with respect to the implementation of this Consent Order and shall submit these results in monthly progress reports as described in Section VII.E. (Work to be Performed) of this Consent Order.

C. At the request of EPA, Respondent shall allow split or duplicate samples to be taken by EPA, and/or its authorized representative, of any samples collected by Respondent pursuant to the implementation of this Consent Order. Respondent shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. In addition, EPA shall have the right to collect any additional samples that EPA deems necessary.

D. Respondent shall ensure that the laboratory utilized by Respondent for analyses participates in an EPA quality assurance/quality control program equivalent to that which is followed by EPA and which is consistent with EPA document QAMS-005/80. In addition, EPA may require submittal of data packages equivalent to those generated in the EPA Contract Laboratory Program (CLP) and may require laboratory analysis of performance samples (blank and/or spike samples) in sufficient number to determine the capabilities of the laboratory.

E. Notwithstanding any provision of this Consent Order, the EPA hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, RCRA, and any other applicable statute or regulation.

XI. ACCESS

A. From the effective date of this Consent Order until

EPA provides written notice of satisfaction of the terms of the Order, the United States and its authorized representatives, including EPA and its contractors, shall have access at reasonable times to the Site and any property to which access is required for the implementation of this Consent Order, to the extent access to the property is controlled by or available to Respondent, for the purposes of conducting any activity authorized by or related to this Consent Order, including, but not limited to:

1. Monitoring the RI/FS work or any other activities taking place on the property;
2. Verifying any data or information submitted to the United States;
3. Conducting investigations relating to contamination at or near the Site;
4. Obtaining samples;
5. Evaluating the need for or planning and implementing additional remedial or response actions at or near the Site; and
6. Inspecting and copying records, operating logs, contracts, or other documents required to assess Respondent's compliance with this Consent Order.

B. All EPA personnel, authorized representatives and agents agree to observe Olin's Site specific health and safety rules and procedures while on Site.

C. EPA will make available to Respondent the results of sampling or tests or other data similarly generated by EPA after such data has passed quality control by EPA.

D. To the extent that the Site or any other area where work is to be performed under this Consent Order is owned or controlled by persons other than Respondent, Respondent shall use its best efforts to secure from such persons access for Respondent, as well as for EPA and authorized representatives or agents of EPA, as necessary to effectuate this Consent Order. Copies of such access agreements will be provided to EPA prior to Respondent's initiation of field activities. If access is not obtained by Respondent's best efforts within thirty (30) days of the effective date of this Consent Order, Respondent shall promptly notify the EPA. The United States may thereafter use its best efforts to obtain access. Respondent shall, in accordance with Section XVII (Oversight and Reimbursement of

Costs) herein, reimburse the United States for all costs incurred by it in obtaining access, including but not limited to, attorneys' fees and the amount of just compensation and costs incurred by the United States in obtaining access.

E. Notwithstanding any provision of this Consent Order, the EPA retains all of its access authorities and rights under CERCLA, RCRA and any other applicable statute or regulation.

XII. CONFIDENTIALITY OF SUBMISSIONS

A. Respondent may assert a confidentiality claim, if appropriate, covering part or all of the information requested by this Consent Order pursuant to 40 C.F.R. §2.203(b). Such an assertion will be adequately substantiated when the assertion is made. Analytical data will not be claimed as confidential by Respondent. Information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent.

B. Respondent waives any objection to the admissibility into evidence (without waiving any objection as to weight) of the results of any analyses of sampling conducted by or for them at the Site or of other data gathered pursuant to this Consent Order that has been verified by the quality assurance/quality control procedures established pursuant to Section X (Quality Assurance, Sampling and Data Analysis).

XIII. RECORD PRESERVATION

EPA and Respondent agree that each will preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the Site, despite any document retention policy to the contrary. After this six year period, Respondent will notify EPA within ninety (90) calendar days prior to the destruction of any such documents. Upon request by EPA, Respondent will make available to EPA such records or copies of any such records. Additionally, if EPA requests all documents be preserved for a longer period of time, Respondent will comply with that request.

XIV. DISPUTE RESOLUTION

Any disputes arising under this Consent Order shall be resolved as provided herein: If the Respondent objects to any EPA notice of disapproval or decision made pursuant to this Consent Order, the Respondent shall notify EPA's Project Coordinator in writing of its objections within 14 calendar days after receipt of the decision. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional fourteen (14) calendar days from EPA's receipt of the objections to reach agreement. If agreement cannot be reached within fourteen (14) calendar day period, the EPA Waste Management Division Director shall provide a written statement of his or her decision and the reasons supporting that decision to Respondent by certified mail, return receipt requested. The Division Director's determination is EPA's final decision. If Respondent does not agree to perform or does not actually perform the task in dispute as determined by EPA's Division Director, EPA reserves the right to conduct the work itself, to seek reimbursement from the Respondent, and/or to seek other appropriate relief.

Respondent is not relieved of its obligations to perform and conduct any work required by this Consent Order while a matter is pending in dispute resolution except that which is directly dependent, contingent or reliant on the disputed decision.

XV. FORCE MAJEURE

A. "Force Majeure" is defined for the purposes of the Consent Order as an event arising from causes beyond the reasonable control of Respondent and of any entity controlled by Respondent including its contractors and subcontractors, which could not have been overcome by due diligence which delays or prevents the performance of any obligation under this Consent Order. Examples of events which may constitute force majeure events include extraordinary weather events (such as a flooding of River water into the basin within Operable Unit #2), natural disasters, and national emergencies. Examples of events that are not force majeure events include, but are not limited to, normal inclement weather, increased costs or expenses of the Work to be performed under this Consent Order, the financial difficulty of Respondent to perform such tasks, the failure of one or more of Respondent to satisfy its obligation under this Consent Order, acts or omissions not otherwise force majeure attributable to Respondent's contractors or representatives, and the failure of Respondent or Respondent's contractors or

representatives to make complete and timely application for any required approval or permit.

B. When circumstances occur which may delay or prevent the completion of any phase of the Work Plan or access to the Site or to any property on which part of the Work Plan is to be performed, whether or not caused by a force majeure event, Respondent shall notify the EPA Project Coordinator orally of the circumstances within forty-eight (48) hours of when Respondent first knew or should have known that the event might cause delay. If the EPA Project Coordinator is unavailable, Respondent shall notify, either orally or by facsimile transmission, the designated alternate or the Director of the Waste Management Division, EPA Region IV. Within seven (7) working days after Respondent first became aware of such circumstances, Respondent shall supply to EPA in writing: (1) the reasons for the delay; (2) the anticipated duration of the delay; (3) all actions taken or to be taken to prevent or minimize the delay; (4) a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and (5) a statement as to whether, in the opinion of the Respondent, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure.

C. If EPA agrees that a delay is or was caused by a force majeure event, the time for performance of the obligations under this Consent Order that are directly affected by the force majeure event shall be extended by agreement of the parties, pursuant to Section XXIII (Effective Date and Subsequent Modification) for a period of time not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event shall not necessarily justify an extension of time for performance of any subsequent obligation.

D. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or does not agree with Respondent on the length of the extension, the issue shall be subject to the dispute resolution procedures set forth in Section XIV (Dispute Resolution) of the Consent Order. In any such proceedings, to qualify for a force majeure defense, Respondent shall have the burden of proof that the delay or anticipated delay was or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and

that Respondent complied with the requirements of paragraph B of this Section. Should Respondent carry this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of the Consent Order.

XVI. STIPULATED PENALTIES

A. Unless excused under the provisions of Sections XIV (Dispute Resolution) or XV (Force Majeure), the Respondent shall pay into the Hazardous Substance Superfund administered by EPA, the sums set forth below as stipulated penalties.

Stipulated penalties shall accrue as follows:

1. For each day during which the Respondent fails to perform, in accordance with the schedules contained in this Consent Order and in the various plans and reports required under this Consent Order incorporated by reference herein, any of the following activities:

a) submittal and, if necessary, modification of the RI/FS Work Plan and Sampling and Analysis Plan;

b) submittal and, if necessary, modification of the draft and final Remedial Investigation Report (RI Report);

c) submittal and if necessary, modification of the draft and final Endangerment Assessment and data required to be submitted to ATSDR for use in its Health Assessment;

d) submittal and, if necessary, modification of the draft and final Feasibility Study (FS);

e) payment of oversight costs as provided in Section XVII (Oversight and Reimbursement of Costs).

Respondent shall be liable to EPA for stipulated penalties in the following amounts:

<u>Period of Failure to Comply</u>	<u>Penalty Per Violation Per Day</u>
1st through 14th day	\$ 1,000.00
15th through 44th day	\$ 2,000.00
45th day and beyond	\$ 3,000.00

2. If Respondent fails to submit a monthly progress report within five (5) days after its due date, Respondent shall be liable to EPA for stipulated penalties in the amount of

\$200.00 per violation for each day during which Respondent fails to submit and, if necessary, modify monthly reports.

3. Respondent shall be liable to EPA for stipulated penalties in the amount of \$500.00 per violation for each day during which Respondent fails to comply with all other requirements of this Consent Order including, but not limited to, any implementation schedule, payment requirement, notification requirement or completion deadline.

B. All stipulated penalties begin to accrue on the day the violation occurs or on the day following Respondent's failure to comply with any schedule or deadline or the terms, conditions, or requirements contained in this Consent Order and/or Work Plan. Stipulated penalties shall continue to accrue until Respondent's violation ends or until Respondent complies with the particular schedule or deadline.

Payment of stipulated penalties shall be due and owing within fifteen (15) days from the receipt of a written notice from EPA notifying Respondent that penalties have been assessed. Respondent shall pay a handling charge of one percent to be assessed at the end of each 31 day period, and a six percent per annum penalty charge, to be assessed if the penalty is not paid in full within 90 days after it is due. The check and transmittal letter shall identify the Name of the Site, the Site identification number and the title of this Order.

Payment should be made to:

U. S. Environmental Protection Agency
Region IV
Superfund Accounting
P. O. Box 100142
Atlanta, Georgia 30384
Attn: Collection Officer for Superfund

A copy of the transmittal letter and check should be sent simultaneously to the EPA Project Coordinator.

C. Respondent may dispute EPA's right to the stated amount of penalties by invoking the Dispute Resolution procedures under Section XIV (Dispute Resolution) of this Order. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within 30 days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Order.

D. The stipulated penalties set forth in this Section do not preclude EPA from electing to pursue any other remedies or sanctions, which may be available to EPA by reason of the Respondent's failure to comply with any of the requirements of this Consent Order. Such remedies and sanctions may include a suit for statutory penalties up to the amount authorized by law, a federally-funded response action, and a suit for reimbursement of costs incurred by the United States.

XVII. OVERSIGHT AND REIMBURSEMENT OF COSTS

In accordance with Section 104(a)(1) of CERCLA, as amended, 42 U.S.C. §9604(a)(1), Respondent agrees to reimburse the Hazardous Substance Superfund for all necessary response and oversight costs incurred by EPA or its authorized representatives in oversight of Respondent's performance of work under the Consent Order.

At the end of each fiscal year, EPA will submit to Respondent an accounting of all response and oversight costs incurred by the U.S. Government with respect to this Consent Order. Oversight costs shall include all direct and indirect costs of EPA's arrangement for oversight of the RI/FS, including, but not limited to, time and travel costs of EPA personnel and associated indirect costs, contractor costs, compliance monitoring, including the collection and analysis of split samples, inspection of RI/FS activities, Site visits, interpretation of Consent Order provisions, discussions regarding disputes that may arise as a result of this Consent Order, review and approval or disapproval of reports, the costs of redoing any of Respondent's tasks, and any assessed interest.

EPA's certified Agency Financial Management System Summary data (SPUR Reports) and any other necessary documents, shall serve as basis for payment demands.

Failure to submit an accounting in one fiscal year does not prevent EPA from submitting an accounting for that year in a subsequent fiscal year. Respondent shall, within 30 days of receipt of that accounting, remit a check for the amount of those necessary costs, made payable to the Hazardous Substance Superfund. Interest shall begin to accrue on the unpaid balance from that date. Checks should specifically reference the identity of the Site and should be sent to:

U.S. Environmental Protection Agency IV
Region IV
Superfund Accounting
P.O. Box 100142
Atlanta, Georgia 30384
ATTENTION: Collection Officer for Superfund

A copy of the transmittal letter and check should be sent simultaneously to the EPA Project Coordinator.

Respondent agrees to limit any disputes concerning costs to accounting errors and the inclusion of costs outside the scope of this Consent Order. Respondent shall identify any contested costs and the basis of its objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set out above. Disputed costs shall be paid by Respondent into an escrow account while the dispute is pending. Respondent bears the burden of establishing an EPA accounting error or the inclusion of costs outside the scope of this Consent Order.

EPA reserves the right to bring an action against the Respondent pursuant to Section 107 of CERCLA to enforce the response and oversight cost reimbursement requirements of this Consent Order and to collect stipulated penalties assessed pursuant to Section XVI of this Consent Order.

XVIII. RESERVATION OF RIGHTS

Notwithstanding compliance with the terms of this Consent Order, the Respondent is not released from liability, if any, for any actions beyond the terms of this Consent Order taken by EPA respecting this Site. EPA reserves the right to take any enforcement action pursuant to CERCLA or any other available legal authority, including the right to seek injunctive relief, monetary penalties, and punitive damages for any violation of law or this Consent Order.

Except as otherwise provided herein, EPA and Respondent expressly reserve all rights and defenses that they may have, including EPA's right both to disapprove of work performed by Respondent and to request that Respondent perform tasks in addition to those detailed in the RI/FS Work Plan, as provided in this Consent Order. In the event that Respondent declines to perform any additional or modified tasks, EPA will have the right to undertake any RI/FS work. In addition, EPA reserves the right to undertake removal actions and/or remedial actions at any time. In either event, EPA reserves the right to seek reimbursement from Respondent thereafter for such costs which

are incurred by the United States and Respondent reserves all rights to contest or defend against such claims or actions.

Following satisfaction of the requirements of this Consent Order, Respondent shall have resolved its liability to EPA for the performance of the RI/FS for the operable units that are the subject of this Order. The Respondent is not released from liability, if any, for any actions taken beyond the terms of this Order regarding removals, other operable units, remedial design/remedial action (RD/RA), or activities arising pursuant to Section 121(c) of CERCLA, 42 U.S.C. §9621(c).

XIX. OTHER CLAIMS

Nothing in this Consent Order will constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, and/or disposal of any hazardous substances, hazardous wastes, pollutants, and/or contaminants found at, taken to, and/or taken from the Site.

This Consent Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. §9611(a)(2).

In entering into this Consent Order, Respondent waives any right to seek reimbursement under Section 106(b)(2) of CERCLA, 42 U.S.C. §9606(b)(2), for any past costs associated with this Site, or any costs incurred in complying with this Order.

Respondent shall bear its own costs and attorney fees.

XX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order will be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations unless an exemption from such requirement is specifically provided in this Consent Order, or made a part of this Consent Order by being incorporated herein at some later date.

XXI. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and

employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its officers, employees, receivers, trustees, agents, or assigns, in carrying out the activities pursuant to this Consent Order. The United States Government agency or authorized representative thereof shall not be held a party in any contract involving Respondent at or relating to the Site.

XXII. PUBLIC COMMENT

Upon submittal to EPA of an approved Feasibility Study Final Report, EPA will make both the Remedial Investigation Final Report and the Feasibility Study Final Report available to the public for review and comment for, at a minimum, a thirty (30) day period, pursuant to EPA's Community Relations Policy and the NCP. Following the public review and comment period, EPA will notify Respondent of the remedial action alternative selected for the Site.

XXIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

In consideration of the communications between Respondent and EPA prior to the issuance of this Consent Order concerning its terms, Respondent agrees that there is no need for a settlement conference prior to the effective date of this Consent Order. Therefore, the effective date of this Consent Order will be the date Respondent receives a fully executed copy of the Consent Order. This Consent Order may be amended by mutual agreement of EPA and Respondent. Such amendments will be in writing and will have, as the effective date, that date on which Respondent receives written notification or a facsimile transmission at FAX #615-336-4505. EPA Project Coordinators do not have the authority to sign amendments to the Consent Order.

A change or modification may be made by mutual agreement of the Project Coordinators to any report, plan, specification, schedule, or attachment required by or contained in the Consent Order without formal amendment to the Consent Order provided such change or modification shall be approved in writing by the appropriate EPA delegatee. Any reports, plans, specifications, schedules, and attachments required by this Consent Order are, upon approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA approved reports, plans, schedules, specifications, and attachments will be considered a failure to achieve the requirements of this Consent Order and will subject the Respondent to the provisions included in the "Force Majeure" and "Stipulated Penalties" sections (Sections XV and XVI) of this Consent Order.

No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as relieving Respondent of its obligation to obtain such formal approval of EPA as may be required by this Consent Order.

XXIV. NOTICE TO THE STATE

EPA has notified the State of Alabama pursuant to the requirements of Section 104(c)(2) of CERCLA, 42 U.S.C. § 9604(c)(2).

XXV. TERMINATION

The provisions of this Consent Order will be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that all of the terms of this Consent Order, including any additional tasks which EPA has determined to be necessary, have been completed. This notice shall not, however, terminate Respondent's obligation to comply with Sections XIII (Record Preservation), XVII (Oversight & Reimbursement of Costs) and XVIII (Reservation of Rights) of this Consent Order.

IT IS SO AGREED AND ORDERED:

BY:

Patrick M. Tobin

Patrick M. Tobin
Director, Waste Management Division
Region IV
U.S. Environmental Protection Agency

May 7, 1990
Date

Olin Corporation, the Respondent in the foregoing Olin Chemicals/McIntosh Site Remedial Investigation and Feasibility Study (RI/FS) Administrative Order by Consent (Consent Order), has had an opportunity to confer with EPA and hereby consents to and agrees to abide by the issuance and terms of the Order for the performance of the RI/FS at the Olin Chemicals/McIntosh Site in McIntosh, Alabama.

IT IS SO AGREED:

BY:


Respondent

Robert L. Yohe

Executive Vice President

(Type In Name and Title)

5/2/90

Date

42K

10 11 0014

**SCOPE OF WORK
REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS)**

**McINTOSH PLANT SITE
OLIN CORPORATION
McINTOSH, ALABAMA**

for:

**Olin Corporation
Charleston, Tennessee**

**March 1990
Revised April 1990**

Woodward-Clyde Consultants 

Consulting Engineers, Geologists, and Environmental Scientists
2822 O'Neal Lane, Baton Rouge, LA 70896

TABLE OF CONTENTS

	<u>Page Number</u>
1.0 Purpose of Remedial Investigation (RI)/Feasibility Study (FS)	1
2.0 Scope of Work	3
2.1 Task 1: Project Planning and Preparation of Work Plans and other Project Plans	4
2.1.1 Work Plan	6
2.1.2 Sampling and Analysis Plan	8
2.1.3 Health and Safety Plan	9
2.2 Task 2: Community Relations	9
2.3 Task 3: Field Investigations/Site Characterization	10
2.3.1 Operable Unit 1	10
2.3.2 Operable Unit 2	12
2.3.3 Implementation of Site Characterization	13
2.3.4 Site Characterization Deliverables	15
2.4 Task 4: Baseline Risk Assessment	16
2.5 Task 5: Treatability Studies	17
2.6 Task 6: Development and Screening of Remedial Action Alternatives	17
2.7 Task 7: Detailed Analysis of Remedial Action Activities	19
2.8 Task 8: Remedial Investigation (RI)/Feasibility Study (FS) Final Report	21
References	22

LIST OF TABLES

10 11 0016

**Table
Number**

- 1 Summary of the Major Deliverables for the Remedial Investigation and Feasibility Study at Olin's McIntosh Plant
- 2 List of Guidance Manuals

LIST OF FIGURES

**Figure
Number**

- 1 Site Map

1.0 PURPOSE OF REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS)

The following are the objectives of the proposed Remedial Investigation/Feasibility Study:

1. To investigate the nature and lateral and vertical extent of contamination at the site (waste types, concentrations and distributions) for all affected media including air, ground water, soil, surface water and sediment, including confirmation of the results of previous investigations. The lateral and vertical extent of contamination will include any offsite migration resulting from the entire site.
2. To refine and expand the results of previously submitted Baseline Risk Assessment to assess the current and potential risk to public health, welfare, and the environment; and
3. To develop and evaluate alternatives for an appropriate remedial action to prevent or mitigate the migration or the release or threatened release of contaminants from the site.

Two operable units have been designated for the site as shown in the site location map in Figure 1. Operable Unit 1 (OU-1) is the RCRA plant area (all of the Olin property except as defined in OU-2), including the following SWMUs:

1. Stormwater pond
2. Brine filter backwash pond
3. Pollution abatement (pH) pond
4. Weak Brine Pond
5. Mercury Waste Pile Storage pad
6. TCAN Hydrolyzer
7. Mercury Drum Storage Pad
8. Chromium Drum Storage Pad

9. PCB/Hexachlorobenzene Storage Building 10 11 0018
10. Hazardous Waste Drum (Flammable Storage Pad
11. Sanitary Landfills (2)
12. Old Plant (CPC) Landfill
13. Inactive Ash Ponds (2)
14. Active Ash Pond.
15. Lime Ponds (2)
16. Diaphragm Cell Brine Pond and Overflow Basin

Operable Unit 2 (OU-2) is the Basin including the wetlands within the Olin property line and the wastewater ditch leading to it. The Basin itself previously received wastewater from the Olin facility. A considerable data base has been collected for Operable Unit 1 as a result of the RCRA related monitoring programs and other investigations. A RCRA Corrective Action Program has been implemented for Operable Unit 1. A less extensive data base has been collected for Operable Unit 2. A Forward Planning Study Report prepared by CDM under contract to U. S. EPA concluded that additional data needs were primarily associated with the Basin, now designated as Operable Unit 2. Consequently, to achieve the objectives of the RI/FS, the tasks of the Scope of Work are anticipated to be mostly associated with Operable Unit 2, since Olin believes that Operable Unit 1 has been characterized.

Olin will conduct simultaneously the RI/FS for OU-1 and OU-2 and produce an RI/FS Report (revised) that is in accordance with the scope of work proposed in this submittal, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final) (U. S. EPA Office of Emergency and Remedial Response, October 1988), and other guidances (see Table 2) used by EPA in conducting an RI/FS, as well as any additional requirements specified in the administrative order.

10 11 0019

2.0 SCOPE OF WORK

The Scope of Work proposed in this submittal is in response to EPA's Special Notice letter received by Olin on January 15, 1990. The proposed scope of work has been developed to be consistent with the site management strategy specified by EPA in their Special Notice letter and other relevant documents listed in Table 2. It is based on review of the existing data, documents, various correspondence from EPA, and a site visit by Olin's representatives and their consultant. All aspects of the work to be performed under the scope of work proposed here will be under the direction and supervision of qualified personnel as approved by EPA.

The specific RI/FS activities proposed for the McIntosh site are segregated into the following tasks:

- Task 1: Project Planning and Preparation of Work Plan and the associated project plans
- Task 2: Community Relations
- Task 3: Field Investigation and Site Characterization
- Task 4: Baseline Risk Assessment
- Task 5: Treatability Studies
- Task 6: Development and Screening of Remedial Action Alternatives
- Task 7: Detailed Analysis of Remedial Action Alternatives
- Task 8: Remedial Investigation (RI)/Feasibility Study Report (FS)

A list of the deliverables under each of the above tasks is given in Table 1. The proposed scope of work under each of the above tasks is described below.

2.1 Task 1: Project Planning and Preparation of Work Plans and Other Project Plans

As a part of the scoping process, Olin and their consultant conducted a site visit on February 13, 1990, to observe the physiography, hydrology, geology, various closed waste management units, on-going corrective action measures, and demography of the site as well as related natural resource, ecological and cultural features. The purpose of this site visit was to gain a better understanding of the possible sources of contamination, potential exposure pathways and receptors at the site.

Existing site data including the data presented in the Remedial Investigation (RI)/Risk Assessment report previously submitted to U. S. EPA in November 1989 were reviewed by Olin and their consultant to determine additional data needed for site characterization, better define potential applicable or relevant and appropriate requirements (ARARs), and develop a range of preliminarily identified Remedial Action Alternatives. Efforts were also made to evaluate the sampling procedures, adequacy of sampling of various media (soils, sediments, surface water, and ground water), and quality of analytical data to determine the need for additional sampling efforts and the need to conduct confirmatory sampling and analysis. This effort will be expanded for preparation of project plans, including additional review of EPA/ADEM files and review of relevant guidance (see Table 2).

As a part of the project planning process Olin and their consultant will meet with EPA to define the following:

- o The proposed scope of the project and the specific investigative and analytical efforts, documented through development of Data Quality Objectives (DQOs) to be approved by EPA.

- o Whether there is any need to conduct limited sampling or a more thorough evaluation of the existing data to adequately scope the project.
- o Preliminary remedial action objectives and general response actions.
- o Potential remedial technologies and the need for treatability studies.
- o Potential ARARs associated with the location and contaminants of the site and the potential response actions.

Following the initial meeting with EPA, Olin and their consultant shall conduct a site visit with the EPA Remedial Project Manager (RPM).

Once the proposed scope of work described under each of the above tasks has been agreed upon with EPA, Olin/Consultant will refine the site objectives and identify a preliminary range of broadly defined potential remedial action alternatives. Any revised Site Objectives will be documented in a technical memorandum and are subject to EPA approval prior to development of the other scoping deliverables. Olin/Consultant will then develop the specific work plan/project plans and initiate subcontractor procurement and coordination with analytical laboratories. The RI/FS Work Plan shall be developed and submitted to EPA in conjunction with the Sampling and Analysis Plan (SAP) and the Health & Safety Plan (HSP), although each plan will be delivered under separate cover.

Because of the unknown nature of the site and iterative nature of the RI/FS, additional data requirements may be identified throughout the RI/FS process. Olin will submit a technical memorandum documenting any need for additional data along with the proposed DQOs whenever such requirements are identified. Olin will be responsible for fulfilling additional data and analysis needs identified by EPA consistent with the general scope and objectives of this RI/FS and the Administrative Order (EPA Docket No. 90-13-C) subject to provision of Section VII.

2.1.1 Work Plan. The work plan will include a comprehensive description of the work to be performed, the media to be investigated, the methodologies to be utilized and the rationale for selection of each methodology. A comprehensive schedule for each major activity and submission of each deliverable listed under the RI/FS scope of work will be included. Because the work required to perform an RI/FS is not fully known at the onset, and is phased in accordance with a Site's complexity and the amount of available information, it may be necessary to modify the Work Plan during the RI/FS to satisfy the objectives of the study. The work plan will specifically present the following details:

- A statement of the problem(s) and potential problem(s) posed by the Site and the objectives of the RI/FS.
- A background summary setting forth the following:
- A description of the Site including the geographic location, and, to the extent possible, a description of the physiography, hydrology, geology, demographics, ecological, cultural and natural resource features of the Site.
- A synopsis of the history of the Site including a summary of past disposal practices and a description of previous responses that have been conducted by local, State, Federal, or private parties at the Site.
- A summary of the existing data in terms of physical and chemical characteristics of the contaminants identified and their distribution among the environmental media at the Site.

- A conceptual "model" describing the contaminant sources and a preliminary risk analysis assessing potential migration and exposure pathways and receptors (both human and environmental).
- A description of the Site Management Strategy developed by EPA during scoping and as may be modified with EPA's approval.
- A preliminary identification of Remedial Action Alternatives and data needs for evaluation of Remedial Action Alternatives. This shall reflect coordination with Treatability Study requirements (see Tasks 1 and 5).
- A process for identifying Federal and State ARARs (chemical-specific, location-specific and action-specific).
- A detailed description of the tasks to be performed, information needed for each task (e.g., for health and environmental risk evaluation), information to be produced during and at the conclusion of each task, and a description of the work products that shall be submitted to EPA. This includes the deliverables set forth in the remainder of this Scope of Work.
- A schedule for each of the required activities which is consistent with the RI/FS Guidance.
- A project management plan, including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, data format and backup data management), monthly reports to EPA, and meetings and presentations to EPA, at the conclusion of each major phase of the RI/FS.

10 11 0024

2.1.2 Sampling and Analysis Plan. The Sampling and Analysis Plan (SAP) will include procedures to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data generated will meet the Data Quality Objectives (DQOs). The SAP will consist of the Field Sampling and Analysis Plan (FSAP) and Quality Assurance Project Plan (QAPP).

Details of the sampling and data gathering methods used for the project will be presented in the FSAP. It will include sample objectives, sample location selection (horizontal and vertical) and frequency of sampling, sampling equipment and procedures, and sample handling and analysis. The details of the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols to achieve the DQOs will be presented in the QAPP. The following items will be specifically included as a minimum in the QAPP:

- o Project Organization and Responsibilities
- o QA Objectives for Measurement
- o Sampling Procedures
- o Sample Custody
- o Calibration Procedures
- o Analytical Procedures
- o Data Reduction, Validation, and Reporting
- o Internal Quality Control
- o Performance and Systems Audits
- o Specific Routine Procedures used to assess data

Olin will submit detailed information to demonstrate that the laboratory selected for analysis is qualified to conduct the work, including information on personnel qualifications, equipment and material specifications. The laboratory will use a QA program equivalent to that required under EPA's CLP and CLP methods will be used.

2.1.3 Health and Safety Plan. Olin/Consultant will develop a Health and Safety Plan (HSP) on the basis of site conditions to protect personnel in site investigative activities. The plan will address all applicable regulatory requirements contained in 20 CFR 1910.120(i)(2) - Occupational Health and Safety Administration, Hazardous Waste Operations and Emergency Response, Interim Rule, December 19, 1986; U. S. EPA Order 1440.2 - Health and Safety Requirements for Employees Engaged in Field Activities; U. S. EPA Order 1440.3 - Respiratory Protection; U. S. EPA Occupational Health & Safety Manual; and U. S. EPA Interim Standard Operating Procedures (September, 1982). The following aspects will be included specifically in the HSP:

- o A health and safety risk analysis for existing site conditions, and for each task and operation
- o Employee training assignments
- o Personal protective equipment to be used by employees for each of the site tasks and operations being conducted
- o Medical surveillance requirements
- o Frequency and types of air monitoring, personal monitoring and environmental sampling techniques and instrumentation to be used
- o Site control measures
- o Decontamination procedures
- o Standard operating procedures for the site

2.2 Task 2: Community Relations

Olin understands that the development and implementation of community relations activities **are** the responsibility of EPA. Although implementation of the community relations **plan** is the responsibility of EPA, Olin will assist by providing information regarding the history of the Site and participating in the public meetings. Olin will participate in community relations activities to the extent determined by EPA. Community relations responsibilities, if any, will be specified in the community relations

10 11 0026

plan. Olin understands that community relations activities conducted by them will be subject to oversight by EPA.

A Community Relations Plan (CRP) will be prepared which describes the techniques that will be used to keep the local community informed of the activities related to the RI/FS and to address community concerns.

2.3 Task 3: Field Investigations/Site Characterization

The overall objective of site characterization is to describe areas of the site that may pose a threat to human health or the environment. The geology and hydrogeology of the McIntosh site has been determined by Olin. A wealth of information including the physiography, demography, ecology, waste characteristics, and engineering properties of the soils was obtained in course of previous investigations conducted at the site. All of the available information was presented in the Remedial Investigation (RI)/Risk Assessment report submitted to EPA in November 1989 and is subject to EPA's review and approval.

Olin believes that the nature of the ground water contamination of the Alluvial aquifer at the site has been very well characterized and the surface and subsurface migration pathways have been defined as a part of the above referenced studies. The contaminant plume has been delineated for the Alluvial aquifer and a corrective action program has been in-place since August, 1987. All of the identified sources were addressed as a part of various closure activities performed under RCRA compliance activities. No other interim remedial measures are anticipated.

2.3.1 Operable Unit 1. A comprehensive review of the existing data has indicated that, while OU-1 is characterized, there are three areas where additional data are warranted to verify these data or to update them to current CERCLA standards. These areas are:

10.11.0027

- o A review to verify that all potential sources have been identified.
- o A sampling to confirm that past data collected under RCRA Quality Assurance (QA) guidelines are valid per the more stringent CERCLA guidelines.
- o A verification that there are no drinking water users that are affected by the site.

For the purpose of the RI/FS, the following work elements are proposed, but not limited to, for Operable Unit 1:

- o Study of historical aerial photographs and identification of additional pathways, if any, for the migration of contaminants
- o A one-time sampling of selected monitoring, corrective action, or production wells for the analysis of site-specific parameters, as a minimum.
- o A survey of domestic wells located within 3 miles radius of the Site. If drinking water wells are identified, they will be sampled.
- o A demonstration of equivalency of the RCRA 40 CFR Part 265 closures with 40 CFR Part 264 requirements
- o Address any deficiencies identified by EPA as result of EPA's review of the RI/RA submitted November 1989

The results of the above proposed work elements will determine additional potential sources of contamination, if any, contributing to the releases previously identified in Operable Unit 1. Further, the scope of work proposed above will refine the conclusions made previously with regard to the nature and extent of contamination and contaminant fate and transport in Operable Unit 1.

If a modeling effort is considered appropriate after evaluating the additional data in conjunction with the already existing data, such models will be identified to EPA in

a technical memorandum prior to their use. The rationale and goals for any modelling effort will also be identified and informed to EPA.

2.3.2 Operable Unit 2. For the purpose of the RI/FS, the following work elements are proposed, but not limited to, for the Operable Unit 2:

- o Evaluation of historic aerial photographs.
- o Bathymetric survey of the basin to map the bottom configuration.
- o Sediment sampling and analysis to determine the lateral and vertical contamination of sediments by sampling at incremental depths on a sampling grid. Sampling to define the effects of recent sediment deposition will be included.
- o Water sampling and analysis based on the sediment data above.
- o A vegetative stress survey to assess potential ecological impacts.
- o Sampling of sediments from the wastewater ditch and tributaries or streams, if present.
- o Sampling of surface waters and sediments along multiple pathways (if applicable) where the Basin discharged into the Tombigbee River.
- o Based upon the sediment sampling, a study of macroinvertebrates will be undertaken in the Basin to assess potential biological impacts. Any impacts will be determined by comparing diversity indices and species composition to control areas.

The results from the above work elements will determine the nature and extent of contamination in OU-2. Possible pathways and receptors will be evaluated. Information on the nature and extent of contamination will be useful in determining the level of risk presented by the basin and will help to determine aspects of the appropriate Remedial Action Alternatives to be evaluated.

10 11 0029

2.3.3 Implementation of Site Characterization. For OU-1, and pending EPA's review of the RI/RA submitted 11/89, it is Olin's belief that the past work has characterized the site except as noted above. Thus, only limited additional site characterization is anticipated to define the source of contaminants and describe the nature and extent of contamination. The implementation of site characterization for both operable units will include the items described in the two paragraphs below.

Olin will initiate field support activities following approval of the Work Plan and SAP. Olin will notify EPA at least two weeks prior to initiating any field support activities so that EPA may adequately schedule oversight tasks. Further, Olin will notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities in both of the aforementioned operable units. Olin will also notify EPA in writing upon completion of field support activities.

Olin will consistently document the quality and validity of field and laboratory data compiled during the Remedial Investigation. At a minimum, these will include the following activities:

- o Documenting field activities through well maintained field logs and laboratory reports in a manner consistent with the procedures in the work plan and/or the SAP.
- o Maintaining sample management and tracking. Olin will maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that validated analytical data are reported and utilized in the development and evaluation of the Baseline Risk Assessment and Remedial Action Alternatives. Analytical results will be accompanied by a corresponding QA/QC report. In addition, Olin will establish a data security system to safeguard chain-of-custody forms and other

project records to prevent loss, damage, or alteration of project documentation.

For OU-2, where the available data are insufficient to fully characterize the site, the activities described in the following paragraphs will be undertaken in addition to the above.

Olin will locate each source of contamination. For each location, the lateral and vertical extent of contamination shall be determined by sampling at incremental depths of a sampling grid or in another organized fashion approved by EPA. The physical characteristics and chemical constituents and their concentrations shall be determined for all known and discovered sources of contamination. Olin will conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs. Sources of contamination will be evaluated to determine potential of contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information necessary to evaluate treatment technologies.

Olin will gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, Olin will utilize the information of Operable Unit 2 physical characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. Olin will then implement the monitoring and study programs identified in the Work Plan or SAP such that, by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at Operable Unit 2 can be determined. In addition, Olin will gather data for calculations of contaminant fate and transport.

16 11 0031

Olin will analyze and evaluate the data to describe: (1) physical characteristics of Operable Unit 2; (2) contaminant source characteristics, (3) nature and extent of contamination; and (4) contaminant fate and transport. The information on physical characteristics, source characteristics, and nature and extent of contamination will be used in the analysis of contaminant fate and transport. The evaluation shall include the actual and potential magnitude of releases from the sources and lateral and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be approved by EPA prior to their use. Also, this evaluation will provide any information relevant to characteristics of Operable Unit 2 necessary for evaluation of the need for remedial action in the Baseline Risk Assessment, the development and evaluation of Remedial Action Alternatives, and the refinement and identification of ARARs. Analyses of data collected for Operable Unit 2 Characterization shall meet the DQOs developed in the QAPP.

2.3.4 Site Characterization Deliverables. Olin will submit the following site characterization deliverables to EPA:

Preliminary Site Characterization Summary: After completing the field sampling and analysis proposed above, Olin will prepare a concise Site Characterization Summary. This summary will review the investigative activities that have taken place and describe and display data for the Site documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, types, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source and the extent of contaminant migration through each of the affected media will be documented. This preliminary site characterization summary report will be used in either developing or refining the previously conducted Baseline Risk Assessment, evaluating the development and screening of Remedial Action Alternatives, and the refinement and identification of ARARs.

10 11 0032

Remedial Investigation (RI) Report: Olin will prepare and submit a Draft RI report to EPA for review and approval after completion of the Baseline Risk Assessment. This report will summarize the field activities undertaken as a part of the RI to characterize the site, additional sources of contamination, if any, in the operable unit 1, nature and extent of contamination, if any, in the Basin (operable unit 2), the fate and transport of contaminants, and results of the Baseline Risk Assessment. The report format will be consistent with the outlines provided in EPA's October 1988 Guidance Manual. Following comments by EPA, Olin will prepare a Final RI Report which satisfactorily addresses EPA's comments.

2.4 Task 4: Baseline Risk Assessment

The Baseline Risk Assessment presented in the previously submitted RI Report will be refined and expanded based on the additional data acquired through the proposed Remedial Investigation activities. The risk assessment analysis will be carried out for Operable Unit 1 (plant property), Operable Unit 2 (Basin) and migration pathways offsite to the Tombigbee River. The purpose of the Baseline Risk Assessment is to assess the potential human health and environmental risks posed by the site in the absence of any remedial action. This effort will involve contaminant characterization, exposure assessment, toxicity assessment, and risk characterization. The Baseline Risk Assessment report will be presented following the guidelines provided in EPA's guidance manuals "Interim Final Risk Assessment Guidance for Superfund, Human Health Evaluation Manual, Volume 1," and "Interim Final Risk Assessment Guidance Document for Superfund, "Environmental Evaluation Manual, Volume II" and other guidance manuals as approved by EPA. Olin will submit the three technical memoranda listed in Table 1, Task 4, for EPA's review and approval.

2.5 Task 5: Treatability Studies

10 11 0033

Olin will conduct bench and/or pilot studies as necessary to determine the suitability of remedial technologies to site conditions and problems. Technologies suitable for the site will be identified as early as possible during the RI activities to determine whether there is a need to conduct treatability studies to better estimate costs and performance capabilities. The identification of the need for treatability studies will be documented to EPA in a technical memorandum. An initial evaluation of the need for treatability testing will be completed during preparation of the range of preliminary identified Remedial Action Alternatives and will continue throughout the RI.

If the need for treatability studies is determined, a Treatability Study Work Plan, including a Sampling and Analysis Plan, and Health and Safety Plan, identifying the types and goals of the studies, the level of effort needed, a schedule for completion, and the data management procedures will be submitted to EPA for review and approval. Necessary bench scale laboratory testings will be conducted upon receipt of approval from EPA.

A report summarizing the Treatability Study and its results will be prepared by Olin and presented in the final RI/FS report.

2.6 Task 6: Development and Screening of Remedial Action Alternatives

Based on the previously conducted remedial investigation activities, it has been determined by Olin that ground water in the Alluvial aquifer is the only known contaminated media at the McIntosh site. Based on the results of the proposed RI activities, it will be determined whether there are any additional contaminated media at the site. As a part of the Feasibility Study (FS), Olin will develop a range of distinct alternatives that will remediate or control any contaminated media at the site, as

deemed necessary in the RI, to provide adequate protection of human health and the environment.

As a part of evaluation of the remedial alternatives, the following steps will be undertaken:

- o Remedial action objectives and general response actions will be established as part of the proposed RI activities
- o Olin will identify areas and volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives.
- o Based on the general response actions developed, waste treatment technologies will be identified and screened to ensure that only those technologies applicable to the contaminants present, their physical matrix, their containment/disposal requirements for residuals or untreated wastes and other site characteristics will be considered. Process options will be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each technology type. Olin will identify the need for treatability testing for those technologies that are probable candidates for consideration during the detailed analysis.
- o The potential technologies and process options will be assembled into media-specific or sitewide alternatives. If many distinct, viable options are available and developed, a screening of alternatives will be conducted to limit the number of alternatives for detailed screening process. The alternatives will be screened on the basis of their

10 11 0035

effectiveness, implementability, and cost. Olin will meet with EPA to discuss which alternatives will be subjected to detailed analysis and to facilitate the identification of action-specific ARARs.

Olin will prepare a technical memorandum summarizing results of all of the above activities proposed under this task, including an alternatives array summary and will submit it to EPA for review and comments. This deliverable will document the methods, rationale, and results of the alternatives screening process.

2.7 Task 7: Detailed Analysis of Remedial Action Alternatives

Olin will conduct a detailed analysis of the selected alternatives to provide EPA with the information needed to allow for the selection of a remedy for the McIntosh site. This detailed analysis process will consist of an individual analysis of each selected alternative against the following criteria:

- o Overall Protection of Human Health and the Environment. This will address whether or not the selected remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- o Compliance with ARARs. This will address whether or not the selected remedy will meet all of the applicable or relevant and appropriate requirements of Federal and Alabama State environmental statutes.
- o Long-Term Effectiveness and Permanence. This will evaluate the ability of the selected remedy to maintain protection of human health and the environment over time once cleanup goals have been met.

- o Reduction of Toxicity, Mobility, or Volume Through Treatment. This is the anticipated performance of the treatment technologies a remedy may employ.
- o Short-Term Effectiveness. This will address the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.
- o Implementability. This addresses the technical and administrative feasibility of the selected remedies, including the availability of materials and services needed to implement a particular option.
- o Costs. This will address estimated capital and operation and maintenance costs and net present worth costs.
- o State Acceptance. This addresses the technical or administrative issues and concerns the Alabama Department of Environmental Management may have regarding each selected alternative.
- o Community Acceptance. This addresses the issues and concerns the public may have to each of the alternatives.

The individual analysis will include: (1) a technical description of each alternative that outlines the waste management strategy involved and identifies the ARARs associated with each alternative; and (2) a discussion that profiles the performance of that alternative with respect to the evaluation criteria listed above. A table summarizing the results of this analysis will be prepared. Once the individual analysis is complete, the alternatives will be compared and contrasted to one another with respect to the evaluation criteria.

10 11 0037

Olin will prepare a Draft FS Report for EPA's review and comments. It is anticipated that the OU-1 section may be a focused FS based on the revised RI and Risk Assessment and OU-2 will be a full FS. This report will be prepared in a manner consistent with the guidelines provided in EPA's RI/FS Guidance Manual (October 1988).

2.8 Task 8: Remedial Investigation (RI)/Feasibility Study (FS) Final Report

After the receipt of approval from the EPA of the draft Feasibility Study Report, the Final FS Report will be bound with the Final RI report and will be submitted to EPA as one document.

REFERENCES

10 11 0038

ERM, 1989, Remedial Investigation and Risk Assessment for Olin Corporation, McIntosh, Alabama (Submitted to U. S. EPA in November, 1989).

Camp & Dresser and McKee, Inc., 1986, Forward Planning Study (Copy Submitted to EPA as Appendix A-1, Remedial Investigation and Risk Assessment for Olin Corporation, McIntosh, Alabama, ERM, 1989).

TABLE 1

10 11 0039

**SUMMARY OF THE MAJOR DELIVERABLES FOR THE
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT
OLIN'S McINTOSH PLANT**

<u>Task</u>	<u>Deliverable</u>	<u>EPA Response</u>
Task 1	Scoping	
	- RI/FS Work Plan	Review and Approve
	- Field Sampling and Analysis Plan	Review and Approve
	- Quality Assurance Project Plan	Review and Approve
	- Site Health and Safety Plan	Review and Approve
Task 3	Site Characterization	
	- Technical Memorandum on Modeling of Site Characteristics (where appropriate)	Review and Approve
	- Preliminary Site Characterization Summary	Review and Comment
	- Draft Remedial Investigation (RI) Report	Review and Approve
Task 4	Baseline Risk Assessment	
	- Technical Memorandum Listing Hazardous Substances and Indicator Chemicals	Review and Approve
	- Technical Memorandum Describing Exposure Scenarios and Fate and Transport Models	Review and Approve

TABLE 1 (continued)

**SUMMARY OF THE MAJOR DELIVERABLES FOR THE
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT
OLIN'S MCINTOSH PLANT**

<u>Task</u>	<u>Deliverable</u>	<u>EPA Response</u>
Task 4 Continued	<ul style="list-style-type: none"> - Technical Memorandum Providing an Environmental Evaluation - Baseline Risk Assessment Chapter of the RI Report 	<p>Review and Approve</p> <p>Review and Approve</p>
Task 5	Treatability Studies	
	<ul style="list-style-type: none"> - Technical Memorandum Identifying Candidate Technologies - Treatability Study Work Plan (or amendment to original Work Plan) - Treatability Study Sampling and Analysis Plan (SAP) (or amendments to original SAP) - Treatability Study Evaluation Report 	<p>Review and Comment</p> <p>Review and Approve</p> <p>Review and Approve</p> <p>Review and Approve</p>
Task 6	Development and Screening of Remedial Action Alternatives	
	<ul style="list-style-type: none"> - Technical Memorandum Documenting Revised Remedial Action Objectives 	<p>Review and Approve</p>

TABLE 1 (continued)

10 11 0041

**SUMMARY OF THE MAJOR DELIVERABLES FOR THE
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT
OLIN'S MCINTOSH PLANT**

<u>Task</u>	<u>Deliverable</u>	<u>EPA Response</u>
Task 6 Continued	- Technical Memorandum or Remedial Technologies, Alternatives, and Screening	Review and Comment
Task 7	Detailed Analysis of Remedial Action Alternatives	
	- Draft Feasibility Study (FS) Report	Review and Approve
Task 8	Final RI/FS Report	

Note: See Table 2 of EPA Scope of Work for number of copies of all deliverables to be submitted.

TABLE 2
LIST OF GUIDANCE MANUALS

10 11 0042

The following EPA Guidance Manuals will be utilized for reference during the proposed RI/FS at Olin's McIntosh plant site.

1. The National Contingency Plan.
2. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final" U. S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.
3. "Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies," U. S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.
4. "Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U. S. EPA, Office of Waste Programs Enforcement, (forthcoming), OSWER Directive No. 9835.3
5. "A Compendium of Superfund Field Operations Methods," Two Volumes, U. S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.
7. "Data Quality Objectives for Remedial Response Activities," U. S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

TABLE 2 (continued)

10 11 0043

LIST OF GUIDANCE MANUALS

8. "Guidelines and Specifications for Preparing Quality Assurance Project Plans," U. S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
9. "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," U. S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
10. "Users Guide to the EPA Contract Laboratory Program," U. S. EPA, Sample Management Office, December 1986.
11. "Interim Guidance of Compliance with Applicable or Relevant and Appropriate Requirements," U. S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
12. "CERCLA Compliance with Other Laws Manual," Two Volumes, U. S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.
13. "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U. S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.
14. "Draft Guidance on Preparing Superfund Decision Documents," U. S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.3-02.

TABLE 2 (continued)

10 11 0044

LIST OF GUIDANCE MANUALS

15. "Superfund Exposure Assessment Manual," U. S. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/001, March 1989, OSWER Directive No. 9285.5-1.
16. "Interim Final Risk Assessment Guidance for Superfund - Volume 1, Human Health Evaluation Manual (Part 2)," EPA/540/1-89/002, December 1989 and - "Volume 2, Environmental Evaluation Manual," EPA/540/1-89/001, March 1989.
17. "Health and Safety Requirements of Employees Employed in Field Activities," U. S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.
18. OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).
19. "Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U. S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.
20. "Community Relations in Superfund: A Handbook," U. S. EPA, Office of Emergency and Remedial Response," U. S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.

TABLE 2 (continued)
LIST OF GUIDANCE MANUALS

10 11 0045

21. "Community Relations During Enforcement Activities And Development of the Administrative Record," U. S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.
22. "Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual," U. S. EPA Region IV, Environmental Services Division, April 1, 1986, (revised periodically).
23. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis," U. S. EPA, Office of Emergency and Remedial Response, February 1988.
24. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis," U. S. EPA, Office of Emergency and Remedial Response, July 1988.
25. "Scope of Work for the Remedial Investigation and Feasibility Study at the Olin Chemicals Site," U. S. EPA Region IV, South Site Remedial Branch, January 1990.
26. "RCRA Guidance on Demonstrating Equivalency of Part 265 Clean Closures with Part 264 Requirements," U. S. EPA, OSWER Directive, May 1989.



--- MARSH AREA

BOUNDARY OF
OPERABLE UNIT 1

CIBA-GEIGY CORP.

BOUNDARY OF
OPERABLE UNIT 2

OLIN CORPORATION
PROPERTY LINE

pH POND (clean closed)

FILTER PONDS (clean closed)

BRINE PONDS (closed)

CLOSED
HG CELL
PLANT AREA

LIME
PONDS
(closed)

SANITARY
LANDFILLS (2)
(closed)

STORMWATER POND
(clean closed)

DIAPHRAM CELL
BRINE PONDS
(active process)

OUTFALL

WASTEWATER
DITCH

ASH POND (active)

ASH PONDS (inactive)

OLD PLANT
LANDFILL (closed)

CLOSED
ORGANICS
PLANT AREA

0 800

SCALE IN FEET

BASIN

TOMBIGBEE RIVER

Olin also
owns property
on west side
of Hwy. 43

HWY 43

OLIN RD.

OLIN CORPORATION
PROPERTY LINE

FIGURE 1. SITE MAP

SOURCE: OLIN CORPORATION

Woodward-Clyde Consultants
Consulting Engineers, Geologists
and Environmental Scientists
Baton Rouge, Louisiana

